MWH
MONTGOMERY WATSON HARZA

December 3, 2002

Timothy J. Prendiville
Remedial Project Manager
United States Environmental Protection Agency, Region 5
Mail Code SR-J6
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Re: Long-Term Groundwater Monitoring Report, Third Round (September 2002)
Blackwell Forest Preserve Landfill Site

Dear Mr. Prendiville:

On behalf of the Forest Preserve District of DuPage County, we are pleased to submit two copies of the Long-Term Groundwater Monitoring Report, Third Round (September 2002) for the Blackwell Forest Preserve Landfill Site.

If you have questions on the attached report, please contact me at (630) 836-8900.

Sincerely,

MWH

Walter G. Buettner, P.E.
Principal Engineer

cc: Rick Lanham – Illinois Environmental Protection Agency (2 copies)
Jerry Hartwig – Forest Preserve District of DuPage County
David Barritt – Chapman and Cutler (without attachment)

Attachment

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Tel 630 836 8900
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LONG-TERM GROUNDWATER MONITORING REPORT
THIRD ROUND (September 2002)

BLACKWELL FOREST PRESERVE LANDFILL SITE
DUPAGE COUNTY, ILLINOIS

MWH File No.: 2090764

Prepared For:

Forest Preserve District
DuPage County, Illinois

Prepared By:

MWH
27755 Diehl Road, Suite 300
Warrenville, Illinois 60555

November 2002

MWH
MONTGOMERY WATSON HARZA

LONG-TERM GROUNDWATER MONITORING REPORT
THIRD ROUND (September 2002)

BLACKWELL FOREST PRESERVE LANDFILL SITE
DUPAGE COUNTY, ILLINOIS

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Prepared For:

Forest Preserve District
DuPage County, Illinois

Prepared by: _____ 11/29/02
Matthew B. Mesarch, Ph.D. — Date
Associate Engineer

Approved by: _____ 11/29/02
Walter G. Buettner, P.E. — Date
Principal Engineer

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ACRONYMS AND ABBREVIATIONS

FPD	Forest Preserve District of DuPage County
IEPA	Illinois Environmental Protection Agency
MCLs	Maximum Contaminant Levels
QAPP	Quality Assurance Project Plan
QC	Quality Control
ORP	Oxidation-Reduction Potential
RI/FS	Remedial Investigation/Feasibility Study
Site	Blackwell Landfill Site
TCL	Target Compound List
TDS	Total Dissolved Solids
VOCs	Volatile Organic Compounds
U.S. EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This report documents the results of the third round of long-term groundwater monitoring conducted in September 2002 at the Forest Preserve District of DuPage County (FPD) Blackwell Landfill Site (Site). The groundwater monitoring was conducted in accordance with the January 8, 2001 Revised Long-Term Groundwater Monitoring Program Report, which was approved by the United States Environmental Protection Agency (U.S. EPA) in a January 22, 2001 letter. The Blackwell Landfill is located within the Blackwell Forest Preserve in Warrenville, DuPage County, Illinois (Figure 1). General Site features are shown in Figure 2.

2.0 SCOPE OF MONITORING PROGRAM

The purpose of the long-term groundwater monitoring program, as outlined in the Revised Long-Term Groundwater Monitoring Program Report, is to:

- Ensure that contaminant levels in groundwater do not increase to a level that could jeopardize either human health or the environment;
- Evaluate the effectiveness of the treatment/containment components on the landfill;
- Detect changes in chemical composition in groundwater at and adjacent to the Site; and
- Demonstrate that natural attenuation is continuing to be an effective remedial strategy for impacted groundwater.

The long-term groundwater monitoring program consists of groundwater level measurements, and groundwater sampling and analyses. Twenty-six monitoring wells are included in the long-term monitoring program, which are divided into:

- Detection monitoring wells, located between the landfill and the downgradient Site boundary;
- Compliance monitoring wells, located along the downgradient Site boundary; and
- Other monitoring wells/piezometers for water level measurement only.

The rationale for including these wells in the groundwater monitoring program is discussed in the Revised Long-Term Groundwater Monitoring Program Report.

The monitoring wells are further grouped into those screened in the upper, glacial outwash aquifer (Figure 3) and those screened in the lower, limestone bedrock aquifer (Figure 4). The 26 wells are listed below in these groupings:

Detection Monitoring Wells

Glacial Outwash Aquifer Wells		Bedrock Wells
G117	G127	G140D
G118S	G129	G128D
G126	G130	

Compliance Monitoring Wells

Glacial Outwash Aquifer Wells		Bedrock Wells	
G122	G147*	G133D	G138

** New monitoring well installed in March 2001 and sampled for two rounds at the request of the U.S. EPA. G147 will not be sampled again because VOCs were not detected in the first two rounds of collected groundwater samples.*

Water Level Wells

Glacial Outwash Aquifer Wells		Bedrock Wells	
P2	G133S	G132D	G137
G107S	G142	G139	
G114	G143	G134	
G121	G144	G135	
G123			

Groundwater samples collected from the Detection and Compliance monitoring wells are to be analyzed for the parameters of concern on a nine-month schedule. This schedule will permit demonstration of seasonal effects on groundwater quality, if any, since groundwater samples will be collected in each of the four seasons over a three-year period. The schedule for the first five rounds of the long-term monitoring program is shown below. Following the fifth sampling event, the FPD will evaluate the groundwater results and recommend possible modifications, if any, to the groundwater monitoring program.

Long-Term Monitoring Round	Sampling Period
First	March 2001
Second	December 2001
Third	September 2002
Fourth	June 2003
Fifth	March 2004

The groundwater samples are to be analyzed for volatile organic compounds (VOCs) on the Target Compound List (TCL), phenol, and water quality parameters (i.e., chloride, sulfate and total dissolved solids (TDS)).

3.0 SUMMARY OF FIELD ACTIVITIES

3.1 GROUNDWATER SAMPLING

Groundwater samples were collected from the Detection and Compliance monitoring wells from September 17 through September 20, 2002. The samples were collected in accordance with procedures described in the U.S. EPA approved Revised Pre-Design Investigation Activities report, Appendix F (July 1997) and all subsequent and approved addenda. The samples were analyzed and validated in accordance with the Quality Assurance Project Plan (QAPP, Volume IV of the Pre-Design Investigation Activities Report, August 1996). These procedures are summarized below:

- Static water levels were measured at each monitoring well (Table 1).
- Water elevations of nearby surface water bodies (i.e., Silver Lake, Pine Lake, Sand Pond, two locations along Spring Brook and one location on the west branch of the DuPage River) (Table 1) were measured by a licensed, professional surveyor on September 16, 2002.
- All monitoring wells were purged with a decontaminated, submersible Grundfos™ pump using low-flow methods. Dedicated tubing was used in each well. Wells were purged until field parameters (i.e., temperature, pH, specific conductivity, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity) stabilized (Table 2).
- All monitoring wells were sampled from the pump discharge following purging. Samples for TDS analysis were filtered using an in-line, 0.45 micron membrane filter.
- Quality control (QC) samples (e.g., duplicates, field blanks, and matrix spike/matrix spike duplicates) were collected at frequencies specified in the QAPP.
- Following collection, the samples were placed in coolers and delivered under strict chain-of-custody to First Environmental Laboratories, Inc. in Naperville, Illinois for analysis.

3.2 ANALYTICAL RESULTS

The groundwater samples were analyzed by First Environmental Laboratories, Inc., of Naperville, Illinois for TCL VOCs, phenol, chloride, sulfate, and TDS. The samples were analyzed in accordance with the analytical methods and required practical quantitation limits outlined in the QAPP and in QAPP addenda. The laboratory-supplied data package was reviewed and validated by MWH in accordance with the QAPP and EPA guidance. The validation report has been retained on file at MWH, and is available upon request.

The validated analytical results are summarized in Table 3. The U.S. EPA's Maximum Contaminant Levels (MCLs) and Illinois Environmental Protection Agency (IEPA) Class I Groundwater Standards (i.e., "regulatory standards") are also listed in Table 3 and exceedances of these standards are highlighted. A summary of detections, groundwater standards, and exceedances of standards is provided in Table 4.

The analytical data summarized in Tables 3 and 4 indicate that:

- One VOC was detected during the second round of long-term groundwater monitoring (i.e., cis-1,2-dichloroethene). Cis-1,2-dichloroethene was detected in groundwater samples from two Detection monitoring wells (i.e., G118S and G127) located in the upper outwash aquifer. However, all detected concentrations of cis-1,2-dichloroethene were below regulatory standards.

- TDS was detected in groundwater samples from 5 of the 12 Detection and Compliance wells at concentrations above the secondary MCL. While the maximum detected concentration was 923 mg/L in a sample from outwash Detection well G118S, the exceedances of TDS were distributed among three of the four classes of monitoring wells (i.e., shallow Detection, deep Detection, and deep Compliance).

3.3 COMPARISON TO HISTORIC ANALYTICAL RESULTS

MWH reviewed the historic analytical results obtained from Detection and Compliance monitoring wells during the Remedial Investigation and Feasibility Study (RI/FS) and previous rounds of quarterly groundwater monitoring to assess overall trends in the data and specific changes during the third round of long-term monitoring. The historic data was collected on the following dates:

- First and second round of the RI, 1991 through 1992;

- One round collected during the FS, 1995;

- Eight rounds collected during the Quarterly Groundwater Monitoring Program, 1997 through 2000; and

- Two rounds collected during the Long-Term Groundwater Monitoring Program.

Review of this historic data and Table 4 indicates the following:

- The number of VOCs detected in groundwater samples is decreasing with time. For example, during the first round of the RI in September 1991, a total of seven VOCs were detected within nine monitoring wells. However, during this third round of long-term groundwater monitoring in September 2002, only one VOC (i.e., cis-1,2-dichloroethene) was detected within two outwash Detection wells.

- The concentrations of detected VOCs are also decreasing with time. For the VOC currently detected in the monitoring wells, the maximum detected concentration of 1,2-dichloroethene (total) was 120 ug/L in January 1992 during the second round of the RI. Currently, the maximum concentration of cis-1,2-dichloroethene detected during the third round of long-term sampling is 16.6 ug/L.

- The detected cis-1,2-dichloroethene concentrations in the two outwash Detection wells are consistent with historic results and do not represent a significant increase in VOC concentration as described in the Revised Long-Term Groundwater Monitoring Program.

- Historically, the concentrations of TDS have generally exceeded their Secondary MCLs.

3.4 GROUNDWATER LEVEL MEASUREMENTS

Groundwater elevations were measured prior to groundwater monitoring on September 16, 2002. Surface water elevations were also measured on September 16, 2002. The groundwater and surface water elevations are summarized in Table 1.

3.4.1 Upper Aquifer - Glacial Outwash

The groundwater surface for the upper glacial outwash aquifer is presented on Figure 5. The approximate northern boundary of the glacial aquifer is within the southwest portion of the landfill. The direction of groundwater flow in the glacial aquifer is to the south/southwest. Groundwater flow and the relationship of surface water elevations to groundwater elevations are consistent with the groundwater flows defined in previous monitoring reports.

3.4.2 Lower Aquifer - Bedrock

The potentiometric surface for the lower aquifer is presented on Figure 6. The direction of groundwater flow is to the southwest, and is consistent with the groundwater flow defined in previous monitoring reports.

4.0 SUMMARY AND CONCLUSIONS

Water level measurements collected in September 2002 indicate that the groundwater flow system is similar to historical data. Groundwater in the upper aquifer near the landfill flows to the south and southwest towards the West Branch of the DuPage River. Groundwater flow in the lower aquifer is to the southwest.

The analytical results for the September 2002 sampling event of seven upper aquifer wells and four lower aquifer wells are consistent with past monitoring results, and continue to show a general trend of decreasing number of VOC analytes and decreasing VOC concentrations. During the current monitoring event, groundwater samples from two monitoring wells contained low levels of the VOC cis-1,2-dichloroethene at concentrations below U.S. EPA MCLs and IEPA Class I Groundwater Standards.

The concentrations of TDS detected during the third round of long-term groundwater monitoring are consistent with previous sampling events, and continue to exceed U.S. EPA Secondary MCLs.

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Table 1
Summary of Groundwater Level Measurements (September 2002)
Blackwell Landfill, DuPage County, Illinois

Deep Monitoring Wells (Bedrock)

Well Designation	Depth to Water (feet)	TOIC Elevation (feet)	Groundwater Elevation (feet)	Notes
G128D	15.99	707.41	691.42	Detection Well
G133D	16.73	708.10	691.37	Compliance Well
G138	17.42	708.69	691.27	Compliance Well
G140D	14.05	705.71	691.66	Detection Well

Shallow Monitoring Wells (Glacial Outwash)

Well Designation	Depth to Water (feet)	TOIC Elevation (feet)	Groundwater Elevation (feet)	Notes
G117	15.18	707.44	692.26	Detection Well
G118S	18.04	711.33	693.29	Detection Well
G122	14.80	706.52	691.72	Compliance Well
G126	12.53	704.50	691.97	Detection Well
G127	14.45	706.66	692.21	Detection Well
G129	10.32	702.86	692.54	Detection Well
G130	17.04	710.40	693.36	Detection Well
G147	13.29	704.72	691.43	Compliance Well

Water Level Wells

Well Designation	Depth to Water (feet)	TOIC Elevation (feet)	Groundwater Elevation (feet)	Notes
P2	8.06	699.18	691.12	Glacial Outwash Aquifer Well
G107S	15.53	708.60	693.07	Glacial Outwash Aquifer Well
G114	16.79	709.40	692.61	Glacial Outwash Aquifer Well
G121	11.90	703.71	691.81	Glacial Outwash Aquifer Well
G123	15.53	707.77	692.24	Glacial Outwash Aquifer Well
G133S	15.99	708.04	692.05	Glacial Outwash Aquifer Well
G142	16.77	709.17	692.40	Glacial Outwash Aquifer Well
G143	14.03	706.56	692.53	Glacial Outwash Aquifer Well
G144	8.57	701.88	693.31	Glacial Outwash Aquifer Well
G132D	27.26	725.99	698.73	Bedrock Well
G134	28.99	727.20	698.21	Bedrock Well
G135	27.81	721.07	693.26	Bedrock Well
G137	10.65	701.89	691.24	Bedrock Well
G139	10.74	702.22	691.48	Bedrock Well

Surface Water

Measurement Location	Surface Water Elevation (feet)
Silver Lake	703.47
Pool West of Silver Lake	701.59
Sand Pond	691.82
Pine Lake	691.73
Spring Brook - No. 2	700.42
Spring Brook - No. 3	694.38
DuPage River	690.28

Notes:
Surface water levels were surveyed on September 16, 2002.
Groundwater levels were measured on September 16, 2002.
All depth and elevation measurements in units of feet.
TOIC = Top of inner casing

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Table 2
Summary of Field Parameters[1] (September 2002)
Blackwell Landfill, DuPage County, Illinois

Deep Monitoring Wells (Bedrock)

Well Number	Type of Well	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductivity (us/cm)	Turbidity (NTU)	Oxidation - Reduction Potential (mV)
G128D	Detection	7.23	15.17	0.00	0.676	275.0	-70
G133D	Compliance	7.20	13.26	0.00	0.827	153.0	15
G138	Compliance	7.21	14.97	0.00	0.864	109.0	69
G140D	Detection	7.07	14.68	0.00	0.861	383.0	97

Shallow Monitoring Wells (Glacial Outwash)

Well Number	Tyep of Well	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductivity (us/cm)	Turbidity (NTU)	Oxidation - Reduction Potential (mV)
G117	Detection	7.09	15.19	0.00	0.675	122.0	-70
G118S	Detection	6.72	14.38	0.00	1.27	146.0	-57
G122	Compliance	7.02	16.70	0.00	0.771	92.3	80
G126	Detection	6.92	16.29	0.00	1.09	83.0	4
G127	Detection	6.94	15.69	0.00	0.750	264.0	-48
G129	Detection	7.01	16.48	0.00	0.711	806.0	-55
G130	Detection	7.02	13.59	0.00	1.36	179.0	160
G147	Compliance	NS	NS	NS	NS	NS	NS

Notes
(1) Stabilized field parameters.
°C - Degrees Celsius
mg/L - Milligrams per liter
us/cm - Microsiemens per centimeter
NTU - Nephelometric turbidity units
mV - Millivolts
NS - Not Sampled. G147 was not sampled because VOCs were not detected during the first two rounds of long-term groundwater monitoring.

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Table 3
Validated Analytical Results
Round 3, Long-Term Groundwater Monitoring Program
Blackwell Landfill, DuPage County, Illinois

Parameter (Sample Date)	EPA MCLs	IEPA Class I Standards	Units	BW-GW-FB01-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-FB02-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-G117-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-G118S-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-G118S-911 09/20/02 Conc	LQ/DVQ	PQL
VOC																		
Acetone		700*	ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Benzene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Bromodichloromethane	100/80 (THM)	0.02a	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Bromoform	100/80 (THM)	0.2a	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Bromomethane (Methyl bromide)		9.8*	ug/L		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10
2-Butanone (MEK)			ug/L		U/R	10		U/R	10		U/R	10		U/R	10		U/R	10
Carbon disulfide		700*	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Carbon tetrachloride	5	5	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Chlorobenzene (Monochlorobenzene)	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Chlorodibromomethane	100/80 (THM)	140*	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Chloroethane			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Chloroform	100/80 (THM)	0.02a	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Chloromethane			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
1,1-Dichloroethane		700*	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,2-Dichloroethane	5	5	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
1,1-Dichloroethene	7	7	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
cis-1,2-Dichloroethene	70	70	ug/L		U/	5		U/	5		U/	5	8.9	/	5	8	/	5
trans-1,2-Dichloroethene	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,2-Dichloropropane	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
cis-1,3-Dichloropropene		1a (cis + trans)	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
trans-1,3-Dichloropropene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Ethyl benzene	700	700	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
2-Hexanone (MBK)			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
4-Methyl-2-pentanone (MIBK)			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Methylene chloride	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Styrene	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,1,2,2-Tetrachloroethane			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Tetrachloroethene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Toluene	1000	1000	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,1,1-Trichloroethane	200	200	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
1,1,2-Trichloroethane	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Trichloroethene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Vinyl Acetate		7000*	ug/L		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10
Vinyl Chloride	2	2	ug/L		U/	2		U/	2		U/	2		U/	2		U/	2
m-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
o-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
p-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
SVOC																		
Phenol		100	mg/L		U/	0.01		U/	0.01		U/	0.01		U/	0.01		U/	0.01
Inorganic																		
Chloride	250**	200	mg/L		U/	5		U/	5	31	/	5	5	/	5		U/	5
Sulfate	500	400	mg/L		U/	15		U/	15	48	/	15	273	/	15	289	/	15
Total Dissolved Solids	500**	1200	mg/L		U/	10		U/	10	458	/	10	923	/	10	938	/	10

Table 3
Validated Analytical Results
Round 3, Long-Term Groundwater Monitoring Program
Blackwell Landfill, DuPage County, Illinois

Parameter / Sample Date	EPA MCLs	IEPA Class I Standards	Units	BW-GW-G122-11 9/17/02 and 9/19/02 Conc	LQ/DVQ	PQL	BW-GW-G126-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-G127-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-G128D-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-G128D-911 09/20/02 Conc	LQ/DVQ	PQL
VOC																		
Acetone		700*	ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Benzene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Bromodichloromethane	100/80 (THM)	0.02a	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Bromoform	100/80 (THM)	0.2a	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Bromomethane (Methyl bromide)		9.8*	ug/L		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10
2-Butanone (MEK)			ug/L		U/R	10		U/R	10		U/R	10		U/R	10		U/R	10
Carbon disulfide		700*	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Carbon tetrachloride	5	5	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Chlorobenzene (Monochlorobenzene)	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Chlorodibromomethane	100/80 (THM)	140*	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Chloroethane			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Chloroform	100/80 (THM)	0.02a	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Chloromethane			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
1,1-Dichloroethane		700*	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,2-Dichloroethane	5	5	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
1,1-Dichloroethene	7	7	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
cis-1,2-Dichloroethene	70	70	ug/L		U/	5		U/	5	16.6	/	5		U/	5		U/	5
trans-1,2-Dichloroethene	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,2-Dichloropropane	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
cis-1,3-Dichloropropene		1a (cis + trans)	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
trans-1,3-Dichloropropene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Ethyl benzene	700	700	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
2-Hexanone (MBK)			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
4-Methyl-2-pentanone (MIBK)			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Methylene chloride	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Styrene	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,1,2,2-Tetrachloroethane			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Tetrachloroethene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Toluene	1000	1000	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,1,1-Trichloroethane	200	200	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
1,1,2-Trichloroethane	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Trichloroethene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Vinyl Acetate		7000*	ug/L		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10
Vinyl Chloride	2	2	ug/L		U/	2		U/	2		U/	2		U/	2		U/	2
m-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
o-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
p-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
SVOC																		
Phenol		100	mg/L		U/	0.01		U/	0.01		U/	0.01		U/	0.01		U/	0.01
Inorganic																		
Chloride	250**	200	mg/L	21	/	5	101	/	5	36	/	5	31	/	5	31	/	5
Sulfate	500	400	mg/L	64	/	15	64	/	15	61	/	15	69	/	15	56	/	15
Total Dissolved Solids	500**	1200	mg/L	**524**	/	10	**623**	/	10	**516**	/	10	459	/	10	457	/	10

Table 3
Validated Analytical Results
Round 3, Long-Term Groundwater Monitoring Program
Blackwell Landfill, DuPage County, Illinois

Sample Date / Parameter	EPA MCLs	IEPA Class I Standards	Units	BW-GW-G129-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-G130-11 9/17/02 and 9/19/02 Conc	LQ/DVQ	PQL	BW-GW-G133D-11 9/17/02 and 9/19/02 Conc	LQ/DVQ	PQL	BW-GW-G138-11 9/17/02 and 9/19/02 Conc	LQ/DVQ	PQL	BW-GW-G140D-11 9/17/02 and 9/19/02 Conc	LQ/DVQ	PQL
VOC																		
Acetone		700*	ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Benzene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Bromodichloromethane	100/80 (THM)	0.02a	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Bromoform	100/80 (THM)	0.2a	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Bromomethane (Methyl bromide)		9.8*	ug/L		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10
2-Butanone (MEK)			ug/L		U/R	10		U/R	10		U/R	10		U/R	10		U/R	10
Carbon disulfide		700*	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Carbon tetrachloride	5	5	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Chlorobenzene (Monochlorobenzene)	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Chlorodibromomethane	100/80 (THM)	140*	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
Chloroethane			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Chloroform	100/80 (THM)	0.02a	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Chloromethane			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
1,1-Dichloroethane		700*	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,2-Dichloroethane	5	5	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
1,1-Dichloroethene	7	7	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
cis-1,2-Dichloroethene	70	70	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
trans-1,2-Dichloroethene	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,2-Dichloropropane	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
cis-1,3-Dichloropropene		1a (cis + trans)	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
trans-1,3-Dichloropropene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Ethyl benzene	700	700	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
2-Hexanone (MBK)			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
4-Methyl-2-pentanone (MIBK)			ug/L		U/	10		U/	10		U/	10		U/	10		U/	10
Methylene chloride	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Styrene	100	100	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,1,2,2-Tetrachloroethane			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Tetrachloroethene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Toluene	1000	1000	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
1,1,1-Trichloroethane	200	200	ug/L		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5		U/UJ	5
1,1,2-Trichloroethane	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Trichloroethene	5	5	ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
Vinyl Acetate		7000*	ug/L		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10		U/UJ	10
Vinyl Chloride	2	2	ug/L		U/	2		U/	2		U/	2		U/	2		U/	2
m-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
o-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
p-Xylene			ug/L		U/	5		U/	5		U/	5		U/	5		U/	5
SVOC																		
Phenol		100	mg/L		U/	0.01		U/	0.01		U/	0.01		U/	0.01		U/	0.01
Inorganic																		
Chloride	250**	200	mg/L	42	/	5	105	/	5	65	/	5	70	/	5	78	/	5
Sulfate	500	400	mg/L	64	/	15	91	/	15	57	/	15	75	/	15	55	/	15
Total Dissolved Solids	500**	1200	mg/L	482	/	10	799	/	10	540	/	10	574	/	10	563	/	10

Table 3
Validated Analytical Results
Round 3, Long-Term Groundwater Monitoring Program
Blackwell Landfill, DuPage County, Illinois

Parameter / Sample Date	EPA MCLs	IEPA Class I Standards	Units	BW-GW-TB01-11 09/20/02 Conc	LQ/DVQ	PQL	BW-GW-TB02-11 09/20/02 Conc	LQ/DVQ	PQL
VOC									
Acetone		700*	ug/L		U/	10		U/	10
Benzene	5	5	ug/L		U/	5		U/	5
Bromodichloromethane	100/80 (THM)	0.02a	ug/L		U/UJ	5		U/UJ	5
Bromoform	100/80 (THM)	0.2a	ug/L		U/	5		U/	5
Bromomethane (Methyl bromide)		9.8*	ug/L		U/UJ	10		U/UJ	10
2-Butanone (MEK)			ug/L		U/R	10		U/R	10
Carbon disulfide		700*	ug/L		U/	5		U/	5
Carbon tetrachloride	5	5	ug/L		U/UJ	5		U/UJ	5
Chlorobenzene (Monochlorobenzene)	100	100	ug/L		U/	5		U/	5
Chlorodibromomethane	100/80 (THM)	140*	ug/L		U/UJ	5		U/UJ	5
Chloroethane			ug/L		U/	10		U/	10
Chloroform	100/80 (THM)	0.02a	ug/L		U/	5		U/	5
Chloromethane			ug/L		U/	10		U/	10
1,1-Dichloroethane		700*	ug/L		U/	5		U/	5
1,2-Dichloroethane	5	5	ug/L		U/UJ	5		U/UJ	5
1,1-Dichloroethene	7	7	ug/L		U/	5		U/	5
cis-1,2-Dichloroethene	70	70	ug/L		U/	5		U/	5
trans-1,2-Dichloroethene	100	100	ug/L		U/	5		U/	5
1,2-Dichloropropane	5	5	ug/L		U/	5		U/	5
cis-1,3-Dichloropropene		1a (cis + trans)	ug/L		U/	5		U/	5
trans-1,3-Dichloropropene			ug/L		U/	5		U/	5
Ethyl benzene	700	700	ug/L		U/	5		U/	5
2-Hexanone (MBK)			ug/L		U/	10		U/	10
4-Methyl-2-pentanone (MIBK)			ug/L		U/	10		U/	10
Methylene chloride	5	5	ug/L		U/	5		U/	5
Styrene	100	100	ug/L		U/	5		U/	5
1,1,2,2-Tetrachloroethane			ug/L		U/	5		U/	5
Tetrachloroethene	5	5	ug/L		U/	5		U/	5
Toluene	1000	1000	ug/L		U/	5		U/	5
1,1,1-Trichloroethane	200	200	ug/L		U/UJ	5		U/UJ	5
1,1,2-Trichloroethane	5	5	ug/L		U/	5		U/	5
Trichloroethene	5	5	ug/L		U/	5		U/	5
Vinyl Acetate		7000*	ug/L		U/UJ	10		U/UJ	10
Vinyl Chloride	2	2	ug/L		U/	2		U/	2
m-Xylene			ug/L		U/	5		U/	5
o-Xylene			ug/L		U/	5		U/	5
p-Xylene			ug/L		U/	5		U/	5
SVOC									
Phenol		100	mg/L						
Inorganic									
Chloride	250**	200	mg/L						
Sulfate	500	400	mg/L						
Total Dissolved Solids	500**	1200	mg/L						

NOTES:
Conc = concentration
LQ/DVQ = Lab Qualifiers/Data Validation Qualifiers
PQL = Practical Quantitation Limit
* not listed as standard in 620.410:
** Secondary MCLs:
a - Health Advisory Concentration equal to ADL for carcinogens
+ Action Level listed in Drinking Water Regulations
THM - Total for all THMs cannot exceed the 80ug/L level
PHA - Polyaromatic Hydrocarbon
Shade = Exceeds either MCLs or IEPA GW Standards

Sample Label Identifiers:
FB - field blank
GW - groundwater
G107 - well identification
TB - trip blank
VB - volatile blank
SVB - semi-volatile blank
-01 - sample
-91 - duplicate sample

Qualifier Definitions:
U/ - Not detected
/U - Not detected, blank contamination
J/ - Estimated value
/UJ - Not detected, estimated detection limit
/J - Estimated value, data qualifier added
/R - Unusable, data qualifier added
S/ - Analysis performed using MSA
*/ - Duplicate outside control limits
B/ - Detected, but below CRDL (Inorganics only)
B/ - Also detected in method blank (Organics only)
N/ - Matrix spike outside control limits

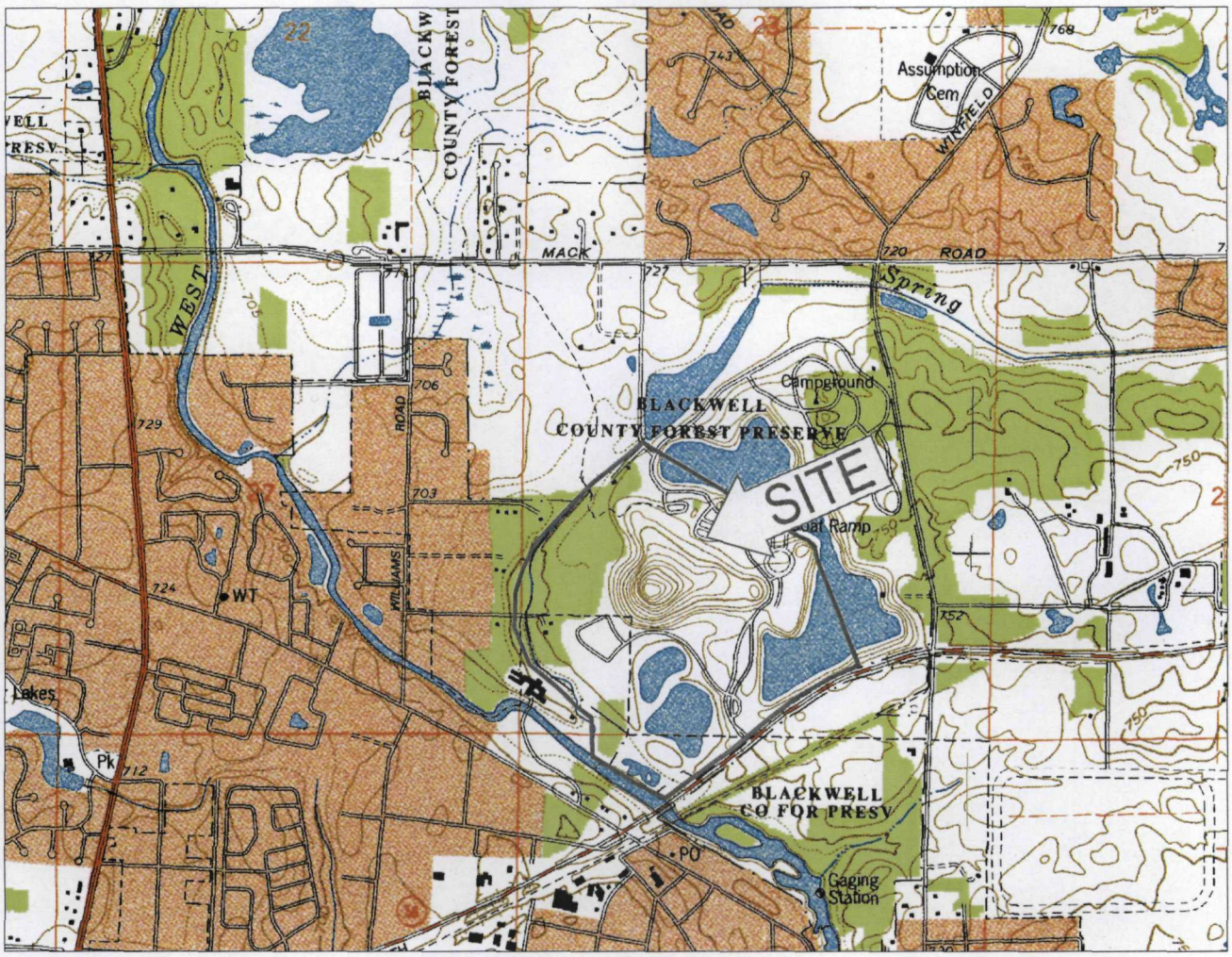
Table 4
Summary of Detections in Monitoring Wells
Round 3, Long-Term Groundwater Monitoring Program
Blackwell Landfill, DuPage County, Illinois

Parameter	EPA MCLs	IEPA Class I Standards	Units	Outwash Detection			Bedrock Detection			Outwash Compliance			Bedrock Compliance		
				Detections	Range		Detections	Range		Detections	Range		Detections	Range	
					Min	Max		Min	Max		Min	Max		Min	Max
VOC															
cis-1,2-Dichloroethene	70	70	ug/L	2 / 6	8.9	16.6	0 / 2	nd	nd	0 / 1	nd	nd	0 / 2	nd	nd
Inorganic															
Chloride	250**	200	mg/L	6 / 6	5	105	2 / 2	31	78	1 / 1	21	21	2 / 2	65	70
Sulfate	500	400	mg/L	6 / 6	48	273	2 / 2	55	69	1 / 1	64	64	2 / 2	57	75
Total Dissolved Solids	500**	1200	mg/L	6 / 6	458	923	2 / 2	459	563	1 / 1	524	524	2 / 2	540	574

Notes:
Shade = Exceeds either MCLs or IEPA GW standards
** Secondary MCLs
nd - no detections

JMS/RHS/jmf
J:\209\0764 Blackwell\2090764m81.xls
2090764

FIGURES



BASE MAP DEVELOPED FROM THE
NAPERVILLE, ILLINOIS 7.5 MINUTE
U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
DATED: 1993

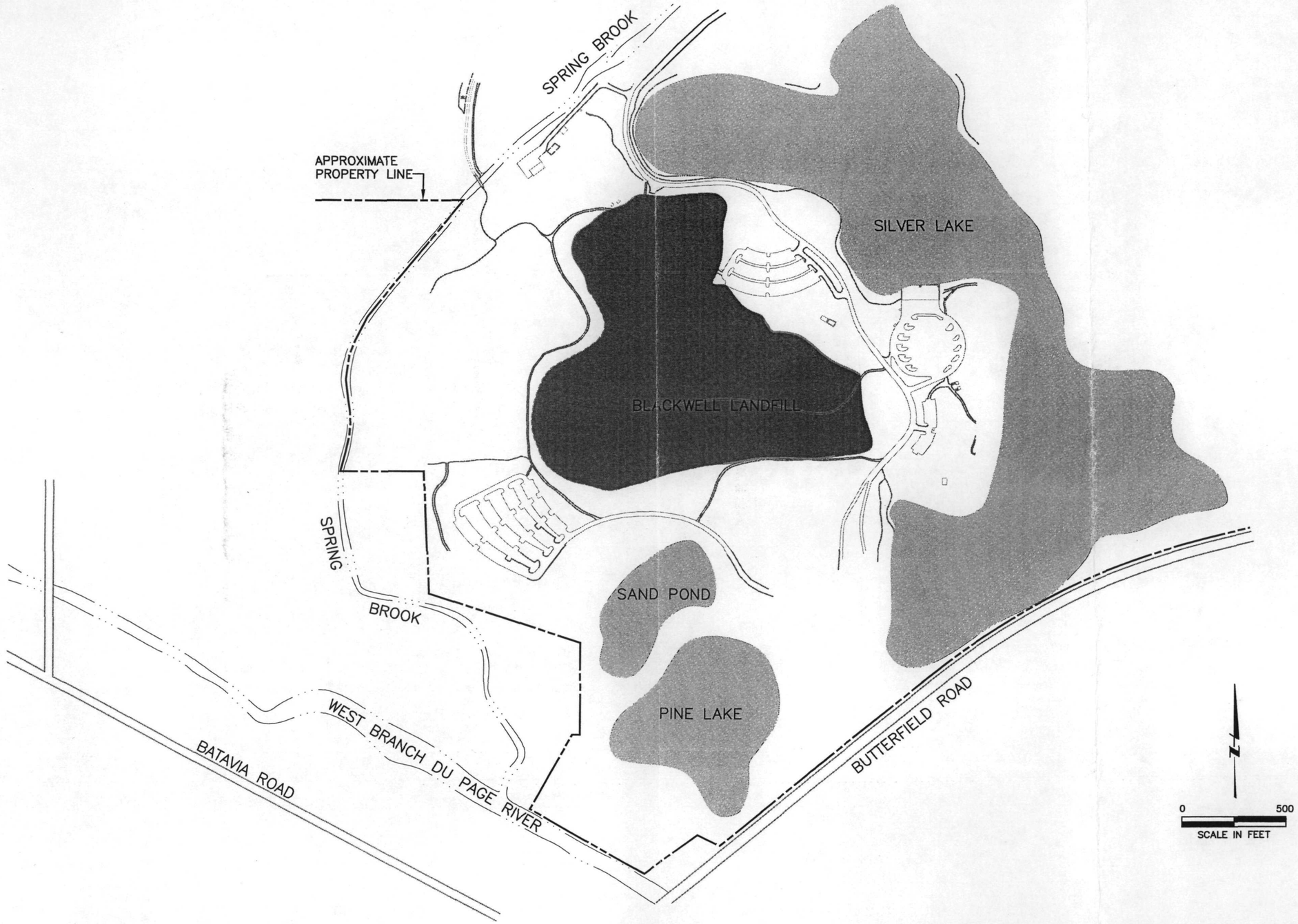
N

2000

SCALE IN FEET

MWH MONTGOMERY WATSON HARZA	BLACKWELL LANDFILL NPL SITE DUPAGE COUNTY, ILLINOIS	SITE LOCATION	FIGURE 1

J:\209\0045 Blackwell\Drawings\2090045_site_loc_map.dwg



MWH MONTGOMERY WATSON HARZA	BLACKWELL LANDFILL NPL SITE DU PAGE COUNTY, ILLINOIS	SITE FEATURES MAP	FIGURE 2

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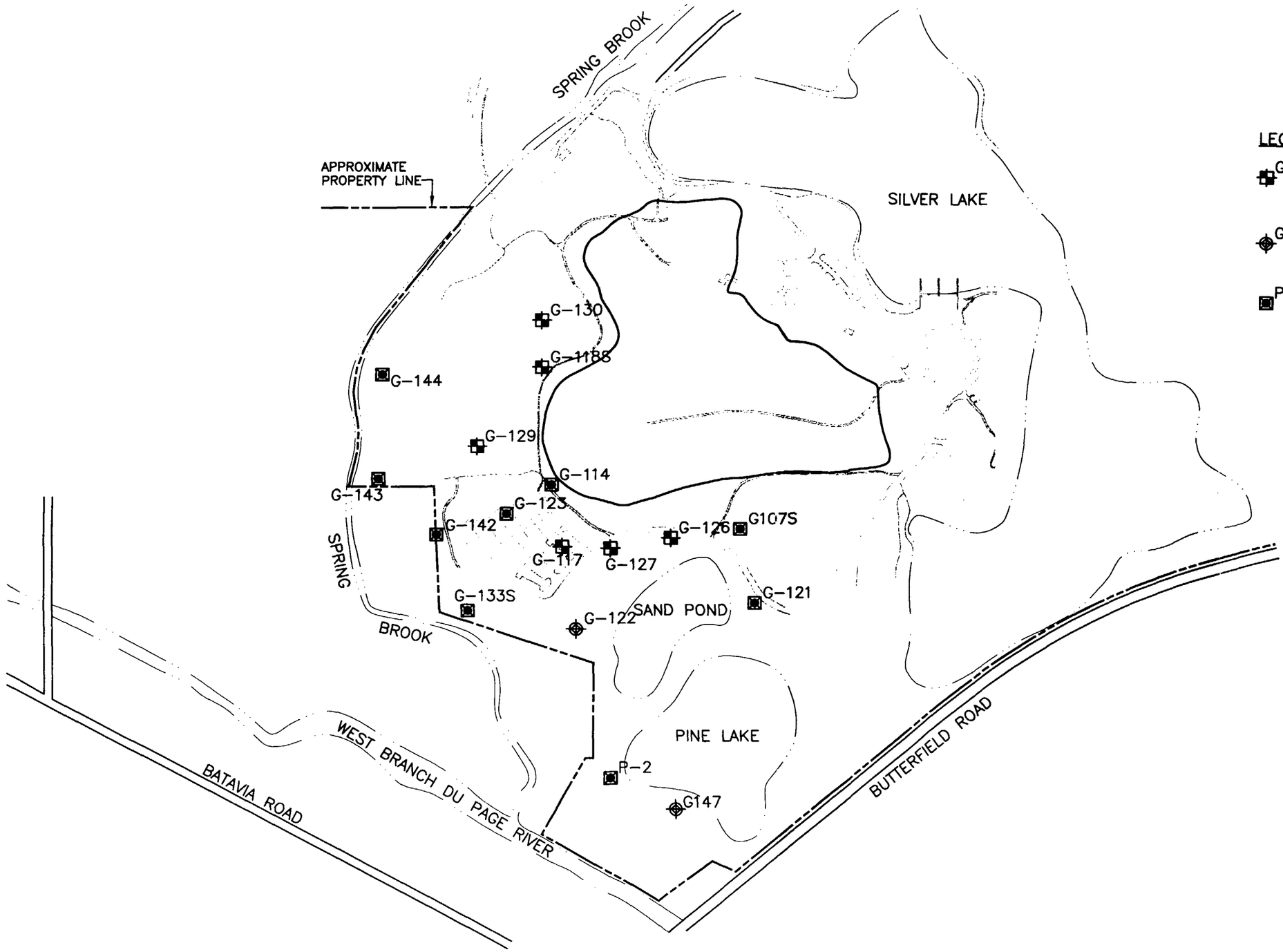


LEGEND

- G-126 — DETECTION MONITORING WELLS, LOCATED BETWEEN THE LANDFILL AND THE DOWNGRADIENT SITE BOUNDARY
- G-122 — COMPLIANCE MONITORING WELLS, LOCATED ALONG THE DOWNGRADIENT SITE BOUNDARY
- P-2 — OTHER MONITORING WELLS/ PIEZOMETERS FOR WATER LEVEL MEASUREMENT ONLY

NOTE
BASE MAP DEVELOPED FROM WARZYN INC. DRAWING NO. 6072100-B47, "GROUNDWATER MONITORING WELL SAMPLING LOCATION MAP", DATED JULY 28, 1994.

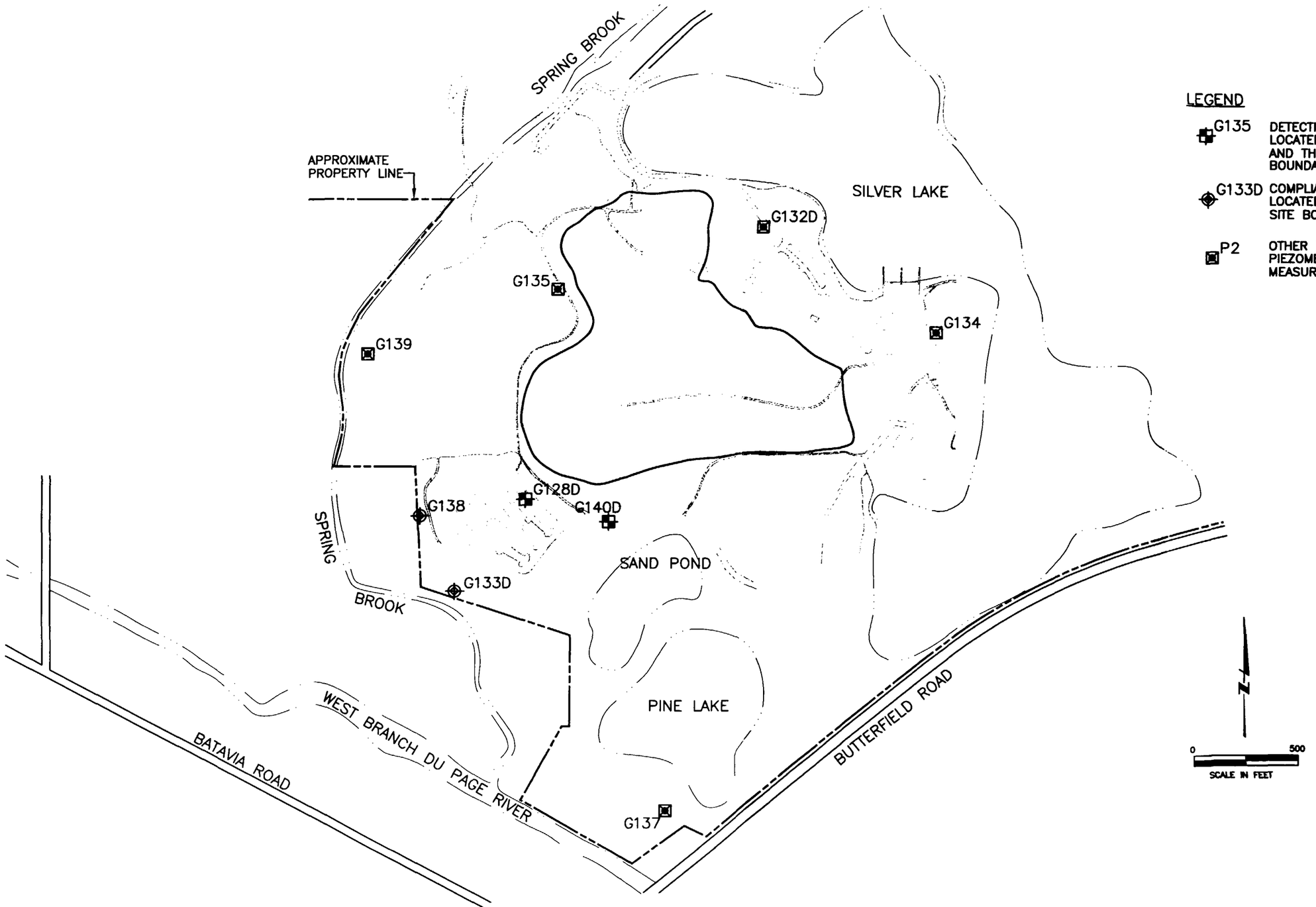
MWH
MONTGOMERY WATSON HARZA

BLACKWELL LANDFILL NPL SITE
DU PAGE COUNTY, ILLINOIS

UPPER AQUIFER WELL AND PIEZOMETER LOCATIONS

FIGURE 3

J:\1252\008\mwdwgs\NEW WELL\long term monitoring 3.dwg



NOTE
BASE MAP DEVELOPED FROM WARZYN INC. DRAWING NO. 6072100-B47, "GROUNDWATER MONITORING WELL SAMPLING LOCATION MAP", DATED JULY 28, 1994.

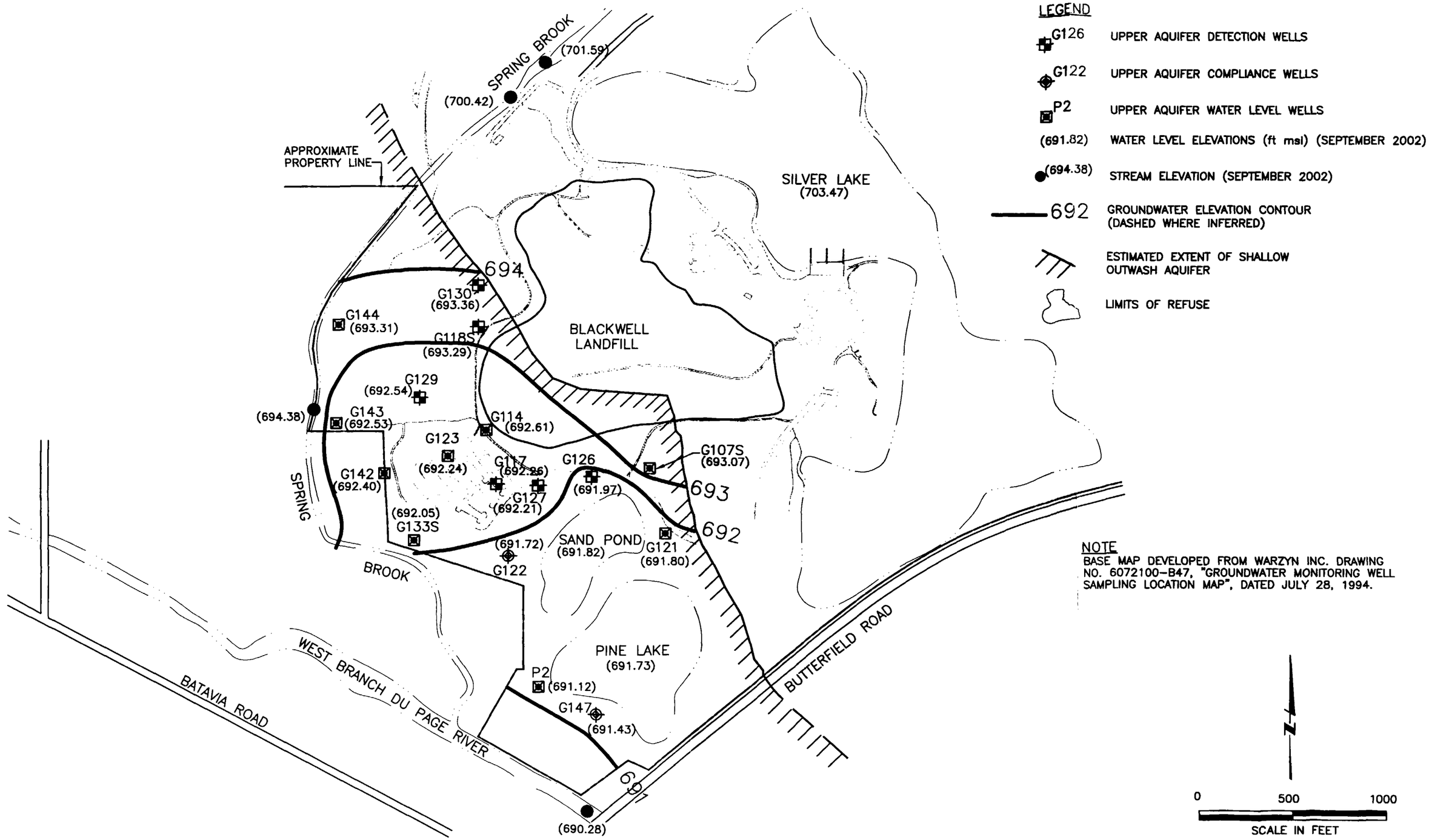
MWH
MONTGOMERY WATSON HARZA

BLACKWELL LANDFILL NPL SITE
DU PAGE COUNTY, ILLINOIS

BEDROCK AQUIFER
WELL LOCATIONS

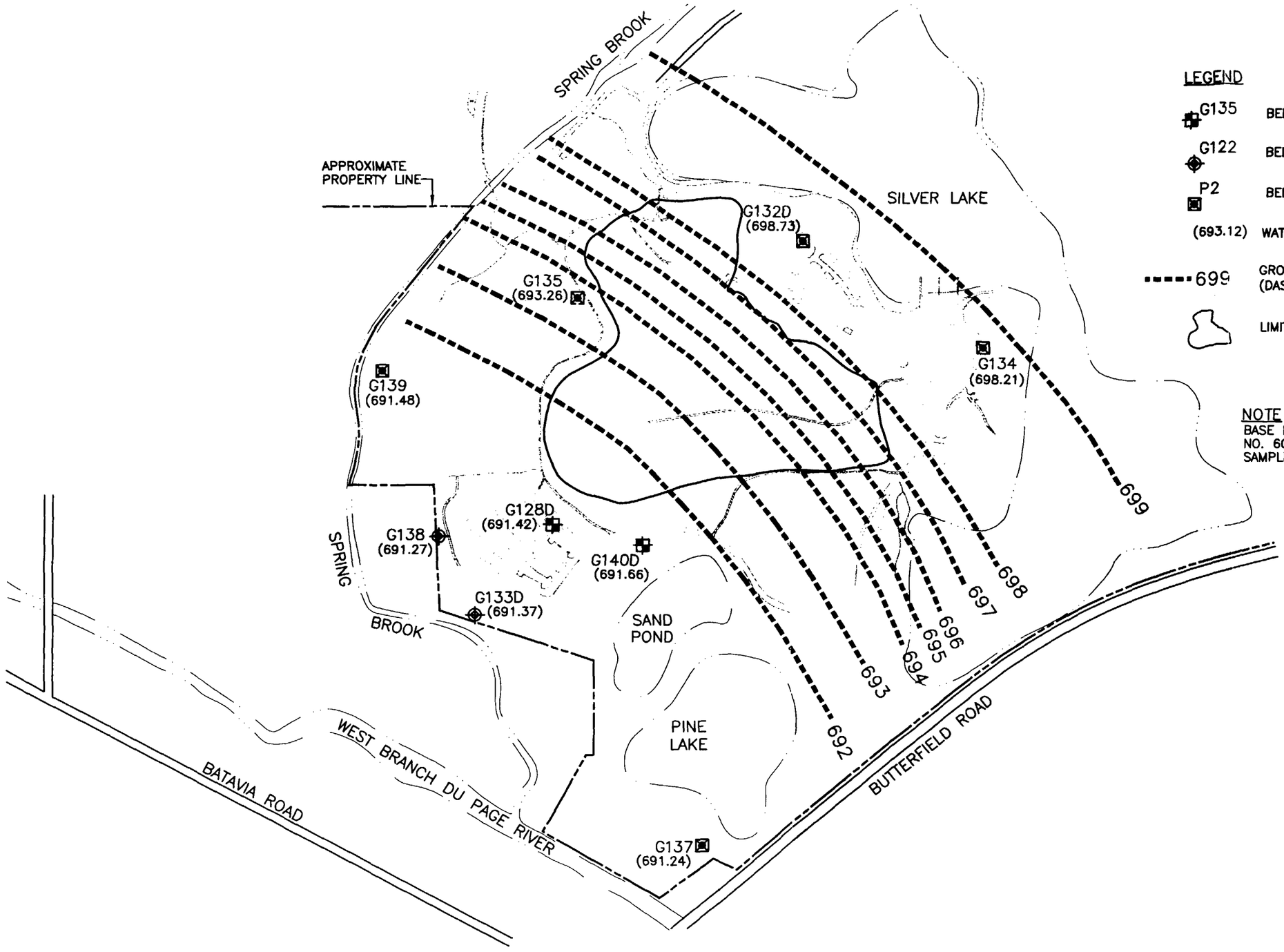
FIGURE
4

J:\1252\008\mwdwgs\NEW WELL\long term monitoring 4.dwg



SCALE			FIGURE
AS SHOWN	MWH MONTGOMERY WATSON HARZA	BLACKWELL LANDFILL NPL SITE DUPAGE COUNTY, ILLINOIS	UPPER AQUIFER WATER TABLE MAP (SEPTEMBER 2002)	5

J:\1252\008\mwdwgs\NEW WELL\SHAL_WELL_SEPT_02_A.dwg



SCALE			FIGURE
AS SHOWN	MWH MONTGOMERY WATSON HARZA	BLACKWELL LANDFILL NPL SITE DUPAGE COUNTY, ILLINOIS	LOWER AQUIFER POTENTIOMETRIC SURFACE MAP (SEPTEMBER 2002)	6

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